



Atal Bihari Vajpayee Govt Institute of Engineering & Technology  
Pragatinagar, Shimla (H.P) – 171202

**DEPARTMENT OF COMPUTER ENGINEERING**

**LESSON PLAN**

|                            |                                        |
|----------------------------|----------------------------------------|
| Academic Year              | 2026-2027                              |
| Semester                   | 3rd                                    |
| Subject Code               | IoT201                                 |
| Subject Title              | Data Communication & Computer Networks |
| Name of Faculty            | Sunaina Stan                           |
| Semester Start & End Dates | 01.08.2026 to 28.11.2026               |

**Study and Evaluation Scheme**

| Sr. No. | Name of the Subject           | Hours/Week |    |     | Total Hrs/Week | Credits | Evaluation Scheme |    |          |     |    |       |     |
|---------|-------------------------------|------------|----|-----|----------------|---------|-------------------|----|----------|-----|----|-------|-----|
|         |                               | L          | P  | DCS |                |         | Internal          |    | External |     |    | Total |     |
|         |                               |            |    |     |                |         | Th                | Pr | Th       | Hrs | Pr |       | Hrs |
| 1.      | Data Communication & Computer | 3          | -- | 1   | 04             | 3       | 40                | -- | 60       | 03  | -- | --    | 100 |

**Course Outcomes:**

After completing this course the students will be able to:

CO-1. Understand the terminology used in the domain of computer networks.

CO-2. Explain the underlying principles of computer

CO-3. Identify and use common networking devices and cables

| Day | Unit   | Topic of Discussion                   | Topic Details                                                       | Delivery Method |
|-----|--------|---------------------------------------|---------------------------------------------------------------------|-----------------|
| 1   | Unit-1 | Introduction to Data Communication    | Definition, characteristics and applications of data communication. | Chalk & Talk    |
| 2   | Unit-1 | Characteristics of Data Communication | Delivery, accuracy, timeliness and jitter.                          | Chalk & Talk    |
| 3   | Unit-1 | Components of Communication System    | Sender, receiver, message, medium and protocol.                     | Chalk & Talk    |
| 4   | Unit-1 | Data Flow                             | Simplex, half-duplex and full-duplex communication.                 | Chalk & Talk    |
| 5   | Unit-1 | Analog and Digital Signals            | Signal types and comparison.                                        | Chalk & Talk    |
| 6   | Unit-1 | Peer-to-Peer &                        | Architecture, features                                              | Chalk & Talk    |

|    |        |                                 |                                             |              |
|----|--------|---------------------------------|---------------------------------------------|--------------|
|    |        | Client-Server                   | and comparison.                             |              |
| 7  | Unit-1 | Signal Characteristics          | Amplitude, frequency, wavelength and phase. | Chalk & Talk |
| 8  | Unit-1 | Composite Signals               | Bandwidth and spectrum.                     | Chalk & Talk |
| 9  | Unit-1 | Transmission Modes              | Baseband and broadband transmission.        | Chalk & Talk |
| 10 | Unit-1 | Broadband Transmission          | Working and applications.                   | Chalk & Talk |
| 11 | Unit-1 | Data Rate Limit                 | Nyquist and Shannon concepts.               | Chalk & Talk |
| 12 | Unit-1 | Revision                        | Discussion and problem solving.             | Chalk & Talk |
| 13 | Unit-1 | Numericals                      | Practice problems.                          | Chalk & Talk |
| 14 | Unit-1 | Class Test Preparation          | Revision of Unit-1.                         | Chalk & Talk |
| 15 | Unit-2 | Objectives of Computer Networks | Need and objectives.                        | Chalk & Talk |
| 16 | Unit-2 | Applications                    | Uses in various domains.                    | Chalk & Talk |
| 17 | Unit-2 | Network Protocols               | Protocols and standards.                    | Chalk & Talk |
| 18 | Unit-2 | Packet Switching                | Concept and operation.                      | Chalk & Talk |
| 19 | Unit-2 | Circuit Switching               | Concept and operation.                      | Chalk & Talk |
| 20 | Unit-2 | Network Topologies-I            | Bus, star and ring.                         | Chalk & Talk |
| 21 | Unit-2 | Network Topologies-II           | Mesh, tree and hybrid.                      | Chalk & Talk |
| 22 | Unit-2 | Network Types                   | PAN, LAN, MAN and WAN.                      | Chalk & Talk |
| 23 | Unit-2 | Internet History                | Evolution of Internet.                      | Chalk & Talk |
| 24 | Unit-2 | Internet Infrastructure         | ISP, backbone and routing.                  | Chalk & Talk |
| 25 | Unit-2 | DNS & Routing                   | Hierarchy and name resolution.              | Chalk & Talk |
| 26 | Unit-2 | Revision                        | Unit revision.                              | Chalk & Talk |
| 27 | Unit-3 | Layered Architecture            | Need and advantages.                        | Chalk & Talk |
| 28 | Unit-3 | OSI Model                       | Seven-layer architecture.                   | Chalk & Talk |
| 29 | Unit-3 | OSI Principles                  | Design principles.                          | Chalk & Talk |
| 30 | Unit-3 | Functions of OSI Layers         | Layer-wise functions.                       | Chalk & Talk |
| 31 | Unit-3 | Protocols                       | Physical to transport protocols.            | Chalk & Talk |
| 32 | Unit-3 | Revision                        | Class Test discussion.                      | Chalk & Talk |
| 33 | Unit-4 | Guided Media                    | Coaxial cable, UTP and STP.                 | Chalk & Talk |

|    |        |                          |                                    |              |
|----|--------|--------------------------|------------------------------------|--------------|
| 34 | Unit-4 | Optical Fibre            | Construction and features.         | Chalk & Talk |
| 35 | Unit-4 | Wireless Media           | Infrared, radio and microwave.     | Chalk & Talk |
| 36 | Unit-4 | Satellite Communication  | Terrestrial and satellite.         | Chalk & Talk |
| 37 | Unit-4 | Transmission Impairments | Attenuation, distortion and noise. | Chalk & Talk |
| 38 | Unit-4 | Networking Devices-I     | Repeater, hub, bridge and switch.  | Chalk & Talk |
| 39 | Unit-4 | Networking Devices-II    | Router, gateway and modem.         | Chalk & Talk |
| 40 | Unit-4 | Revision                 | Revision of Unit-4.                | Chalk & Talk |
| 41 | Unit-4 | Numericals               | Practice session.                  | Chalk & Talk |
| 42 | Unit-5 | TCP/IP Layers            | Architecture and layers.           | Chalk & Talk |
| 43 | Unit-5 | Protocol Data Units      | Encapsulation process.             | Chalk & Talk |
| 44 | Unit-5 | IPv4 and IPv6            | Addressing concepts.               | Chalk & Talk |
| 45 | Unit-5 | CIDR                     | CIDR notation.                     | Chalk & Talk |
| 46 | Unit-5 | Subnetting               | Subnet masks and subnetting.       | Chalk & Talk |
| 47 | Unit-5 | Address Classes          | IPv4 classes and reserved ranges.  | Chalk & Talk |
| 48 | Unit-5 | Revision                 | Unit revision.                     | Chalk & Talk |
| 49 | Unit-6 | Transport Layer          | Functions of transport layer.      | Chalk & Talk |
| 50 | Unit-6 | TCP and UDP              | Comparison and features.           | Chalk & Talk |
| 51 | Unit-6 | Ports                    | Port numbers and services.         | Chalk & Talk |
| 52 | Unit-6 | Telnet and FTP           | Application protocols.             | Chalk & Talk |
| 53 | Unit-6 | SNMP                     | Network management protocol.       | Chalk & Talk |
| 54 | Unit-6 | DHCP and DNS             | Configuration and name resolution. | Chalk & Talk |
| 55 | Unit-6 | Routing Revision         | Revision of routing concepts.      | Chalk & Talk |
| 56 | Unit-6 | Final Revision           | Complete course wrap-up.           | Chalk & Talk |

|                  | Name of Book                                                          | Author Name          | Publication           |
|------------------|-----------------------------------------------------------------------|----------------------|-----------------------|
| Prescribed Books | Data Communications and Networking, McGraw-Hill Education Networking, | Behrouz A. Forouzan, | McGraw-Hill Education |

|                    |                                      |                                               |                    |
|--------------------|--------------------------------------|-----------------------------------------------|--------------------|
|                    | Computer Networks,                   | Andrew S. Tanenbaum and<br>David J. Wetherall | Pearson Education  |
| Reference<br>Books | Data and Computer<br>Communications, | William Stallings,                            | Pearson Education. |



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